Capture & Cooling

NUFAC School Lectures

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1 Preface

1.1 Units

I will use MKS units, except that momentum (p), kinetic Energy (E), and mass (m) will be measured in Volts. These variables will always be given in parentheses. To change to true MKS units, they may be replaced by $(p\ c/e)$, (E/e), and $(m\ c^2/e)$, respectively.

e.g.

$$\rho \ = \ \frac{(p)}{B\ c}$$

rather than

$$\rho \ = \ \frac{(p\ c/e)}{B\ c} \ = \ \frac{p}{B\ e}$$

1.2 Useful Relations

$$dE = \beta_v \, dp \tag{1}$$

$$\frac{dE}{E} = \beta_v^2 \, \frac{dp}{p} \tag{2}$$

$$d\beta = \frac{dp}{\gamma^2} \tag{3}$$